REMARKS/ARGUMENTS

In the Office Action, the Examiner noted that claims 1-13 and 19-39 are pending in the application. The Examiner additionally stated that claims 1-13 and 19-39 are rejected. By this amendment, claims 1, 19, 27, and 39 have been amended. Hence, claims 1-13 and 19-39 are pending in the application.

Applicant hereby requests further examination and reconsideration of the application, in view of the foregoing amendments.

In the Specification

Applicant has amended the Title as required by the Examiner to clearly indicate the invention to which the claims are directed and has amended the Summary to reflect the claim amendments.

In the Claims

Rejections Under 35 U.S.C. §102(b)

The Examiner rejected claims 1-8, 19-35, and 38-39 under 35 U.S.C. 102(b) as being anticipated by Hoyt et al., U.S. Patent No. 5,604,877 (hereinafter, *Hoyt*). Applicant respectfully traverses the Examiner's rejections.

With respect to claim 1, Applicant has amended claim 1 to recite the limitation that the first and second call/return stacks are physically distinct. *Hoyt* does not teach this limitation. *Hoyt*'s Return Stack Buffer is a single physical storage structure for which primary and secondary top of stack (TOS) pointers are maintained defining two logical stacks within the single physical storage structure. Furthermore, Applicant has amended claim 1 to recite the limitation that each of the first and second call/return stacks is configured to store a plurality of return addresses. *Hoyt* also does not teach this limitation. *Hoyt* teaches that his Return Register is only capable of storing a single return address. For these reasons, Applicant respectfully asserts that *Hoyt* does not anticipate amended claim 1 and respectfully requests that the Examiner withdraw his rejection to claim 1.

With respect to claims 2-18, these claims depend from claim 1 and add further limitations that are not anticipated by *Hoyt*. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections to claims 2-18.

With respect to claim 19, Applicant has amended claim 19 to recite the limitations added to claim 1 and respectfully asserts that *Hoyt* does not anticipate amended claim 19 for the reasons stated above with respect to claim 1 and respectfully requests that the Examiner withdraw his rejection to claim 19.

With respect to claims 20-26, these claims depend from claim 19 and add further limitations that are not anticipated by *Hoyt*. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections to claims 20-26.

With respect to claim 27, Applicant has amended claim 27 to recite the limitations added to claim 1 and respectfully asserts that *Hoyt* does not anticipate amended claim 27 for the reasons stated above with respect to claim 1 and respectfully requests that the Examiner withdraw his rejection to claim 27.

With respect to claims 28-38, these claims depend from claim 27 and add further limitations that are not anticipated by *Hoyt*. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections to claims 28-38.

With respect to claim 39, Applicant has amended claim 39 to recite the limitations added to claim 1 and respectfully asserts that *Hoyt* does not anticipate amended claim 39 for the reasons stated above with respect to claim 1 and respectfully requests that the Examiner withdraw his rejection to claim 39.

Rejections Under 35 U.S.C. §103(a)

The Examiner rejected claims 1-8, 19-35, and 38-39 under 35 U.S.C. 103(a) as being unpatentable over Gochman et al., U.S. Patent No. 5,964,868 (herein after *Gochman*) in view of *Hoyt*. Additionally, the Examiner rejected claims 9-10 and 36 under 35 U.S.C. 103(a) as being unpatentable over Gochman in view of *Hoyt* in view of Hilgendorf et al., U.S. Patent No. 5,974,543 (herein after *Hilgendorf*). Additionally, the Examiner rejected claims 11-12 under 35 U.S.C. 103(a) as being unpatentable over Gochman in view of

Hoyt in view of Hilgendorf in view of Shiell et al., U.S. Patent No. 5,850,543 (herein after *Shiell*). Additionally, the Examiner rejected claims 13 and 37 under 35 U.S.C. 103(a) as being unpatentable over Gochman in view of *Hoyt* in view of Hilgendorf in view of Shiell in view of Col et al., U.S. Patent No. 6,108,773 (herein after *Col*). Applicant respectfully traverses the Examiner's rejections.

With respect to claim 1, the Examiner states that *Gochman* has taught a comparator for comparing first and second return addresses provided by first and second call/return stacks (*Gochman*'s SRSB and ARSB) and that it would have been obvious to modify *Gochman* to include the comparing prior to execution as set forth in *Hoyt*. Applicant respectfully disagrees. First, Applicant asserts (as previously asserted in the Office Action Response of 9/20/2004 and in Office Action Response of 2/1/2005) that *Gochman* does not compare the SRSB return address with the ARSB return address, but rather compares the SRSB return address with a final return address obtained from an architectural stack in system memory. *Gochman* does not teach providing the ARSB for the purpose of comparing, much less to detect a misprediction; rather, the only purpose taught for the ARSB, including any return addresses stored therein, is for copying to the SRSB in order to restore the SRSB to a correct state, since the ARSB is only updated after a call or return instruction has been fully executed.

Second, Applicant asserts that, according to the teaching of *Gochman*, it would not have been obvious, or even desirable, to compare *Gochman*'s SRSB return address and ARSB return address prior to execution. If the ARSB return address were compared to the SRSB return address prior to execution of the return instruction and the processor branched to the ARSB return address if the two did not match (a limitation performed by the control logic of claim 1), then the return address would have to be popped off the ARSB. This would be prior to execution, i.e., before the return instruction was fully executed, which would nullify the fundamental characteristic of the ARSB taught by *Gochman*, which is to maintain information only from fully executed instructions in order to always contain architecturally correct information so that the architecturally correct information can be copied to the SRSB to correct it in the event of a misprediction. See col. 3, lines 49-51; col. 4, lines 56-67; col. 7, lines 9-12, 33-35. Thus, even though *Hoyt*

teaches the desirability of detecting a misprediction before execution, since *Gochman* teaches the necessity of maintaining the architecturally correct nature of the ARSB, a person of ordinary skill in the art at the time the invention was made would not have been motivated to modify it for use in performing a compare and responsive branch prior to execution, since this change would have rendered the ARSB inoperative for its primary function taught by *Gochman*.

For these reasons, Applicant respectfully requests that the Examiner withdraw his rejection to claim 1.

With respect to claims 2-18, these claims depend from claim 1 and add further limitations that are not obviated by the references cited by the Examiner. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections to claims 2-18.

With respect to claim 19, Applicant respectfully asserts that the references cited by the Examiner do not obviate amended claim 19 for the reasons stated above with respect to claim 1 and respectfully requests that the Examiner withdraw his rejection to claim 19.

With respect to claims 20-26, these claims depend from claim 19 and add further limitations that are not obviated by the references cited by the Examiner. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections to claims 20-26.

With respect to claim 27, Applicant respectfully asserts that the references cited by the Examiner do not obviate amended claim 27 for the reasons stated above with respect to claim 1 and respectfully requests that the Examiner withdraw his rejection to claim 27.

With respect to claims 28-38, these claims depend from claim 27 and add further limitations that are not obviated by the references cited by the Examiner. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections to claims 28-38.

With respect to claim 39, Applicant respectfully asserts that the references cited by the Examiner do not obviate amended claim 39 for the reasons stated above with respect to claim 1 and respectfully requests that the Examiner withdraw his rejection to claim 39.

CONCLUSIONS

In view of the arguments advanced above, Applicant respectfully submits that claims 19-39 are in condition for allowance. Reconsideration of the rejections is requested, and allowance of the claims is solicited.

Applicant earnestly requests that the Examiner contact the undersigned practitioner by telephone if the Examiner has any questions or suggestions concerning this amendment, the application, or allowance of any claims thereof.

EXPRESS MAIL LABEL NUMBER: EO 005 339 847 US
DATE OF DEPOSIT: 7/19/05
I hereby certify that this paper is being deposited with the U.S. Postal Service Express Mail Post Office to Addressee Service under 37 C.F.R. §1.10 on the date shown above and is addressed to Mail Stop ___ , Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

Respectfully submitted,

By   /E. Alan Davis/

            E. ALAN DAVIS
            Reg. No. 39,954
            Tel.: (512) 301-7234

Date   7/19/2005